

# Business Case

## Context

With the AutomationML Engine there is an API which makes it easy for software to work interoperate with **Automation Markup Language** (AutomationML) files. **Further information about this topic can be found in the customer requirements specification.**

## Objectives

The objectives of this project will be to realize the project with minimal risks and acceptable costs. In order to achieve that, further planning needs to be done. This will contain a **Customer Requirements Specification** (CRS), **System Requirements Specification** (SRS), this **Business Case** (BC), **Project Manual** (PM) and **System Architecture Specification** (SAS).

## Benefits and Impact

The only currently maintained version is written in C#, which limits its usefulness. Having versions in other languages would make it easier and less time consuming for companies to integrate AML support into their software.

This proposal includes the creation of wrappers for the AML.Engine.dll in C++ and JavaScript as well as the documentation of those wrappers and their implementation. Additionally, the development of a console application which includes a parser for AML and AMLX files and returns meaningful error messages. Furthermore, the application also allows to decompress and compress AMLX files.

Everything has to be finished by Mai 15th, 2020. Further details are documented in the customer requirements specification.

## Benefits

### Monetary Upsides

The project results provide a C++ and JavaScript wrapper, so future projects in C++ or JavaScript will not require additional time to implement the Dynamic Link Library (DLL).

## Costs

Role	Rate per Hour	Phase	Absolute Cost
Software Developer	55,16 €	Requirement Analysis	24.098 €
Project Manager	79,94 €	Design	11.164 €
Product Manager	78,02 €	Coding	22.935 €
Lead Developer	62,65 €	Testing	20.424 €
Test Manager	68,77 €	Documentation (User Manual)	15.081 €
Technical Writer	50,78 €	<b>Total</b>	<b>93.702 €</b>

This is how we calculated our costs:

Requirement Analysis: To calculate the requirement analysis costs, the product manager's hourly rate of 26 days for 6 employees with 8 hours/day were used.

Design: To calculate the design costs, the lead developer's hourly rate of 15 days for 6 employees with 8 hours/day were used.

Coding: To calculate the coding costs, the developer's hourly rate of 35 days for 6 employees with 8 hours/day were used.

Testing: The test manager's hourly rate of 25 days for 6 employees with 8 hours/day were used to calculate the testing costs.

Documentation (User Manual): The hourly rate of the technical writer for 25 days for 6 employees with 8 hours/day were used to calculate the documentation costs.

Since the team is only made up of students, fixed costs for the premises, ancillary costs and similar costs ignored, as they have no significance for the project.

## Summary

Staff Costs	93.702 €
License Fees	1.440 €
Fixed Costs	0€
<b>Total Costs</b>	<b>95.142 €</b>
Profit margin (38,6%)	36.154€
<b>Quoted Price</b>	<b>132.000€</b>

## Risk analysis

Type	Risk	Probability	Impact	Consequences	Countermeasure
Personal	Long-term illness	low	medium	Project delayed	Overtime
Personal	Exmatriculation	low	high	Project delayed	Overtime
Personal	Conflicts between team members	low	medium	bad work ethic, poor morale	Communication, Mediation
Technical	Incomplete AMLEngine documentation	high	medium	Incomplete product	Code-Research
Requirements	Change	low	high	Change of Requirements	Communication, specific SRS
Estimation	underestimated time expenditure	medium	medium	Project delayed	Overtime
Tools	Missing Knowledge	medium	high	Project delayed	Research, knowledge exchange, task delegation

## Conclusion/Summary

AutomationML becomes more and more important in our times, as automation of production is a crucial cost factor. Therefore, a lot of companies are currently investing in knowledge on this topic. It is safe to say that the project's cost of ~100 000 € are a good investment, since it will make a difference when working on projects using the AMLEngine in the future.

As shown above, there are some risks associated with the project. Even considering these risks, the project is economically viable and should be realizable.